



The FlyServ architecture



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A research project at Al Ain University receives a fund of one million AED

Al Ain University received a fund of one million dirhams from ASPIRE FUND for a research project on the “Indoor Hybrid Flying Networks for Safety Applications and Services (FlyServ)”.

The project is supervised by Prof. Haythem Bany Salameh, Dean of Scientific Research and

Graduate Studies at Al Ain University, and in partnership with a group of researchers from Al Ain University (UAE), University of Albania (New York), Khalifa University (UAE), Chicago State University (Illinois) to leverage the team's diverse theoretical and practical experience in the fields of communications and networks, optimization, applied machine learning (ML) for communications and networks, drone technology, cloud-based access networks, and testbeds.

In this proposal, drones are proposed to have an impact on societal safety and well-being in largely crowded indoor spaces. During global pandemics such as COVID-19, drones can be used in shopping malls for automatic temperature scanning, facemask and hand gel dispensers, disinfection, to ensure people are following social distancing rules, and also to evacuate if requires. We envision an autonomous multi-drone system that consists of a wirelessly interconnected swarm offering lower times, higher scalability, and more reliability to complete the above-mentioned tasks. The goal is to remove the barrier to advance in pervasive and ubiquitous networking and computing through the intersection of artificial intelligence (AI) and hybrid wireless networks.

The project adopts an AI framework on which the joint design of wireless communications and localization for indoor flying networks deployment can be optimized. Besides radio frequency (RF) technologies, the potential for performance increases is enormous with directional optical communications, namely, visible light communications (VLC) or LiFi, where ubiquitous lighting infrastructure supports high accuracy indoor localization and high-speed communications by mitigation congestion and interference that occurs when Omni-directional RF media are co-located. Our approach entails exploiting collocated WiFi and LiFi with differing characteristics that are applicable in different operating scenarios and developing the means of data-driven (ML) adaptation to the best available configuration.

Prof. Ghaleb El Refae, AAU President, said that receiving this financial grant reflects the amount of attention paid by the university to scientific research and researchers, and this grant is a great responsibility to translate the idea of the research into reality. Stressing that the university is fully prepared to provide all forms of support to researchers, considering that scientific research is one of our priorities.

For his part, Prof. Haythem Bany Salameh indicated that the idea of this project came from the precautionary measures and decisions taken in the UAE to limit the spread of the Covid-19 virus and that the project aims mainly to protect lives and help the concerned authorities in implementing security and safety measures.

[Press Release Link](#)